

987. Advanced Topics in Physics
Fall, Winter, Spring. 3(3-0) or 4(4-0)

In any one term this course will be devoted to a single topic, such as advanced quantum theory, quantum electrodynamics, specialized topics in solid state physics, statistical mechanics, relativity theory and cosmology.

989. Waves and Radiations in Plasmas
Fall of even-numbered years. 3(3-0)

850. *Interdepartmental with the Department of Astronomy and Astrophysics and Electrical Engineering. Administered by Electrical Engineering.*

Plasma oscillation; interaction, electromagnetic fields with plasmas, wave propagation in magnetoionic media; plasma sheath; radiation of electric source in incompressible and compressible plasmas; electroacoustic waves; magnetohydrodynamics; research topics in plasmas.

999. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

PHYSIOLOGY PSL

College of Human Medicine
College of Natural Science
College of Osteopathic Medicine
College of Veterinary Medicine

240. Introductory Physiology
Fall, Spring, Summer. 4(3-2) Sophomores or approval of department.

Survey of the physiology of circulatory system, excretion, nervous system and special senses, digestion, metabolism and endocrinology.

241. Introductory Physiology
Winter, Summer. 4(3-2) 240.

Continuation of 240. Physiology of muscle function and neuro-muscular relationships; exercise; respiration; changes in organ systems in relation to muscular exercise.

323. Physiology, Anatomy, and Hygiene of the Eye
Fall. Summer of even-numbered years. 3(2-2) 240; Elementary Education or Special Education major, or approval of department.

Basic course in anatomy, physiology, and hygiene of the visual system; includes discussion of normal visual functioning and abnormal visual functioning, with methods of correction and education implications.

331. Human Physiology
Winter. 4(4-0) ANT 316; CEM 132, or approval of department.

332. Human Physiology
Spring. 4(4-0) 331.

401. Comparative Physiology I
Fall. 4(3-4) 240 or BS 212 and CEM 132. *Interdepartmental with the Department of Zoology.*

A comparison of osmoregulation, digestion, respiration, and other physiological processes in a wide range of organisms.

402. Comparative Physiology II
Winter. 4(4-0) 401 or approval of department. *Interdepartmental with and administered by the Department of Zoology.*

A comparison of sensory, motor, endocrine and other integrative mechanisms in animals.

416. Physiology of the Cell
Fall. 3(3-0) BCH 401 or 451.

Physiologic mechanisms common to all living cells with emphasis on those of the vertebrates. The functions of the cell membrane and cytoplasm are studied as the basis for the physiologic behavior of vertebrate organs and systems.

417. Physiology of the Cell
Summer. 4(3-3) 4(6-6) 5 weeks.

This is equivalent to 3 hours of lecture and 3 hours of laboratory on a ten-week basis. Approval of department.

Physiologic mechanisms common to all living cells with emphasis on those of the vertebrates. The functions of the cell membrane and cytoplasm are studied as the basis for the physiologic behavior of vertebrate organs and systems.

440. Avian Physiology
Spring. 4(3-3) Approval of department. *Interdepartmental and administered jointly with the Department of Poultry Science.*

A survey of the systemic physiology of birds emphasizing digestion, metabolism, the endocrines, and reproduction.

444. Mammary Physiology
Winter. 4(3-2) 240, BCH 200. *Interdepartmental and administered jointly with the Department of Dairy Science.*

Anatomy of mammary gland. Hormonal and nervous control of mammary growth, initiation and maintenance of lactation. Biochemistry of milk secretion. Physiology of milking; physiological, pathological and management factors affecting lactation.

445. Endocrinology and Reproduction of Farm Animals
Fall. 4(5-0) 240. *Interdepartmental and administered jointly with the Department of Dairy Science.*

Endocrine and reproductive systems are presented with emphasis upon characteristics which can be altered for economic benefit and upon causes, prevention, and treatment of endocrine abnormalities.

IDC. Biological Membranes
For course description, see Interdisciplinary Courses.

480. Special Problems
Fall, Winter, Spring, Summer. 1 to 5 credits. Approval of department.

497. Principles of Endocrinology
Winter. 4(4-0) One year organic chemistry; ZOL 317. *Interdepartmental with and administered by the Department of Zoology.*

Hormonal principles, illustrated by experimental observations, in vertebrates and invertebrates. Emphasis on cellular endocrinology. Group discussion, background in organic chemistry and cell biology strongly recommended. Term paper required.

500A. Introductory Physiology for Medicine
(500.) Fall, Winter. 5(5-0) Admission to the professional program in a college of medicine.

Concepts and problems in physiology to be followed by supplemental physiology instruction during subsequent phases of medical training.

500B. Introductory Physiology for Medicine

Summer. 3(3-0) or 4(3-1) Admission to the professional program in a college of medicine.

Classical concepts and problems in physiology which form a base for clinical physiology training in subsequent terms.

500C. Introductory Physiology for Medicine

Fall. 3(3-0) or 4(3-1) Admission to the professional program in a college of medicine.

Continuation of 500B.

801. Advanced Physiology

(501.) Winter. 4(3-2) 332 or 402 or approval of department; courses in anatomy, histology, biochemistry and calculus recommended.

Principles of physiological control systems. Physiology of the nervous system including, neuromuscular, reflex, sensory and autonomic nervous function. Physiology of respiration; acid-base, regulation of body fluids.

802. Advanced Physiology

(502.) Spring. 4(3-2) 332 or 402 or approval of department; courses in anatomy, histology, biochemistry and calculus recommended.

Physiology of kidney and micturition, blood and cardiovascular system.

803. Advanced Physiology

Fall. 4(3-2) 332 or 402 or approval of department; courses in anatomy, histology, biochemistry and calculus recommended.

Physiology of the digestive system, regulation of metabolism; endocrinology and reproduction.

808. Neuroendocrinology

Winter. 3(3-0) Approval of department.

Anatomical, biochemical and physiological aspects of neuroendocrinology. Control systems and interaction among endocrine glands will be emphasized.

819. Kidney Physiology and Electrolyte Metabolism

Summer. 3(3-0) 802, approval of department.

Critical study of the literature on classical and contemporary principles of renal physiology and related aspects of body fluid and electrolyte metabolism.

835. Neurophysiology

Winter of odd-numbered years. 4(2-4) Approval of department.

Functions and properties of the peripheral and central nervous systems.

836. Physical Principles of Biological Systems

Winter. 3(3-0)

Application of laws and methods of physics to measurement and description of physiological phenomena.

837. Radiobiology

Fall. 3(3-0) Approval of department.

Application of radioactive tracer techniques to study of biological functions. Determination of turnover rates and tissue constituents by isotope dilution. Control of radiation hazards.

**Descriptions — Physiology
of
Courses**

- 859. Analysis of Hormone Action**
Spring. 4(4-0) ZOL 317, or approval of department. Interdepartmental with and administered by the Department of Zoology. Discussion of recent work on the molecular and developmental aspects of hormone action in vertebrates and invertebrates. Selected topics to vary from year to year.
- 865. Advanced Neurobiology**
Spring. 3(3-0) BPY 825. Interdepartmental with the departments of Biophysics, Biomechanics, Psychology and Zoology and administered by the Department of Biomechanics. Basic organization, structure and function of neural networks comprising sensory, motor, and autonomic systems including examples from invertebrates and vertebrates.
- 870. Research Problems and Techniques in Pathologic Physiology**
Spring. 3(3-0) 801, 802, 803. Description of mechanisms of human disease states. Stimulation of research where especially needed. Development of animal models to study these disease states. Lecture demonstrations illustrate methods of producing disease models.
- 875. Advanced Physiology Laboratory**
Spring. 4(2-5) 801, 802, 803 and approval of department. Experiments in animal and human physiology; data collection, analysis and interpretation.
- 885. Vertebrate Neural Systems I**
Fall of odd-numbered years. 5(3-4) Approval of department; ANT 815 and BPY 825 recommended. Interdepartmental with the departments of Zoology, Biophysics and Psychology and administered by the Department of Psychology. Structure and function of major component systems of vertebrate brains, their evolution, ontogeny and comparative analysis in mammals, birds, reptiles, amphibians and fish. Interrelation of behavioral, anatomical and physiological studies.
- 886. Vertebrate Neural Systems II**
Winter of even-numbered years. 5(3-4) PSY 885. Interdepartmental with the departments of Psychology, Biophysics and Zoology and administered by the Department of Zoology. Continuation of 885. Major component systems of vertebrate brains, their evolution, ontogeny, and comparative analysis in mammals, birds, reptiles, amphibians and fish. Interrelation of behavioral, anatomical, and physiological studies.
- 899. Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
- 910. Seminar**
Fall, Winter, Spring. 1(1-0) May re-enroll for a maximum of 2 credits for the Master's program and a maximum of 4 additional credits for either the Ph.D. or the diploma program.
- 915. Respiratory Physiology**
Fall. 4(3-2) 801, approval of department. Development of ideas leading to our present state of knowledge in respiration.
- 919. Cardiovascular System**
Fall. 4(3-3) 802. Outstanding literature on physiology of heart, blood vessels and lymphatics, hemodynamics, cardiac output and circulation in special regions. Appropriate methodology discussed. Laboratory work illustrates principles of special procedures.

- 945. Physiology of Mammalian Reproduction**
Winter. 4(5-0) DRY or PSL 445 or approval of department. Interdepartmental with and administered by the Department of Dairy Science. Chemistry and biosynthesis of reproductive hormones. Gonadal, hypothalamic and pituitary development of reproductive potential. Ovulation, fertilization, implantation and placentation will be studied. Relationships of conceptus, uterus and corpus luteum. Parturition.
- 950. Topics in Physiology**
Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 9 credits. Approval of department. Classical and modern concepts in selected areas of physiology.
- 980. Problems**
Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 9 credits. Approval of department. Limited amounts of individual work on selected research problems.
- 999. Research.**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

- 251. Human Values and Politics I: On Liberty**
Fall. 4(4-0)
How conflicts over basic human values of liberty, equality, justice, and individualism lie at the root of major issues of American public policy such as capital punishment, abortion, censorship, women's rights, school prayers. Centers on questions of citizenship, slavery, life and death. Approved through Summer term 1979.
- 252. Human Values and Politics II: Equality and Justice**
Winter. 4(4-0)
Continuation of 251. Focuses on policies dealing with crime and punishment, equality of opportunity, role of courts in assuring rights of women, blacks, and the poor. Approved through Fall term 1979.
- 253. Human Values and Politics III: Individual and Community**
Spring. 4(4-0)
Continuation of 252. Focuses especially on conflicts between individual and community in such issues as tolerance of political and ethnic minorities, the right of privacy, free speech, censorship, abortion. Approved through Winter term 1980.

IDC. Continuing Revolution in China: Problems and Approaches
For course description, see Interdisciplinary Courses.

POLITICAL SCIENCE PLS

College of Social Science

- 100. American National Government**
Fall, Winter, Spring, Summer. 4(3-0)
Major aspects of national government with emphasis on the policy-making process.
- 140. Comparative Politics**
Fall, Winter, Spring. 4(3-0)
Comparison of political systems in western and non-western nations.
- 160. International Relations**
Fall, Winter, Spring, Summer. 4(3-0)
Contemporary world affairs surveyed. The struggle for power, the nation-state system; factors creating harmony and hostility among nations. War and peace in our time.
- 170. The Isms**
Fall, Winter, Spring, Summer. 4(3-0)
Introduction to basic contemporary political ideologies; theoretical foundations of democracy, socialism, communism, political elitism, and nationalism. Special attention to ideology underlying contemporary political problems.
- 200. Introduction to Political Science**
Fall, Winter, Spring, Summer. 4(3-0)
Acquaints the student with the theories, methods and concepts of political science. Emphasis is on ideology and interests in the political process.
- IDC. Introduction to Latin America III**
For course description, see Interdisciplinary Courses.
- IDC. The Politics of Ecology**
For course description, see Interdisciplinary Courses.
- 290. Methods of Political Research**
Fall, Winter. 4(3-0)
Design and execution of research in political behavior and institutions. Major emphasis on logic underlying various types of political research, on identification of appropriate data sources and field methods.
- 291. Methods of Political Research**
Winter, Spring. 4(3-0) 290.
Analysis of political data, with major emphasis on quantitative techniques.
- 301. American State Government**
Fall, Winter, Spring, Summer. 4(3-0)
Major aspects of policy-making process at the state government level. Comparison of state political systems.
- 302. American Urban Government**
Fall, Winter, Spring, Summer. 4(3-0)
Urban political process in America. Politics of policy-making for urban functions; politics of intergovernmental relations.
- 303. Michigan Government**
Spring. 4(3-0)
How Michigan government is organized and conducted and how policies are made; sources of executive-legislative conflict; politics of taxation; role of the state in local affairs; balance of political forces in the state.
- 310. Public Bureaucracy in the Policy Process**
Fall, Spring. 4(3-0)
Introduces student to following major areas of public administration: development of administration in the U.S.; theories of administrative organization; principles and methods of administrative management; executive leadership; interpersonal and intergroup relationships; levels of decision making, ethics and responsibility.